

PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY

MEETING OF FEBRUARY 6, 1934

A regular meeting of the Society was held on February 6, 1934, in the American Museum of Natural History; President A. L. Melander in the chair with seventeen members and seventeen visitors present.

Mr. Wuster exhibited a specimen of the saturnid moth, *Samia cecropia*, which, on issuing from its cocoon, showed the interesting aberration of a black marginal band about the edges of all wings.

Mr. Davis showed a male cicada, *Platypedia latipennis* Davis, recently sent to him for identification by Prof. George F. Knowlton of the Utah Agricultural College, Logan, Utah. It was collected on a Russian thistle at Vernal, Utah, June 12, 1931, by Prof. Knowlton and is the only one seen since the type, collected at Douglas Spring, Routt County, Colorado, June 20, 1920, by J. W. Frey, was described in the JOURNAL OF THE NEW YORK ENTOMOLOGICAL SOCIETY, March, 1921. The type, by permission of Prof. T. D. A. Cockerell, is now in the collection of the American Museum of Natural History. After thirteen years, it is gratifying to have the species confirmed by the discovery of a second specimen.

Dr. Melander had an interesting exhibit of one box of insects, containing 750 specimens, which represented part of the collecting he had done during the past two weeks while in Bermuda. Collecting was not at its height but the box represented a considerable addition to the insect fauna of Bermuda.

Dr. Klots, now with the College of the City of New York, expressed pleasure in being able once more to attend the meetings of the Society.

Prof. Albert L. Weber spoke on "Fruit Sprays and the Residue Problem" in place of the announced speaker. The residue problem came into prominence in 1925 when the farmers of southern New Jersey were notified that their apples had excessive amounts of arsenic residue from spraying and were therefore condemned by the Federal authorities. With the aid of slides, Prof. Weber described the various methods of removing residue by polishing, and by washing in dipping tanks. He also explained the use of wetting or degumming agents to remove oil spray and wax from the apples. The New Jersey Agricultural Experiment Station recommended the machine known as the Pedal Washer, and degumming agents for removing spray residue of arsenic and lead.

Prof. Weber's remarks were discussed at some length by the members present.

E. S. ENGELHARDT, *Secretary*

MEETING OF FEBRUARY 20, 1934

A regular meeting of the Society was held on February 20, 1934, in the American Museum of Natural History; President A. L. Melander in the chair with nineteen members and nine visitors present.

A communication was read from the National Association of Audubon Societies inviting the Society to send a representative, for consultation with others, to draft recommendations to be presented to the Park Commissioner for "the preservation and restoration of attractive conditions for wild life in suitable areas of the parks of Greater New York. Dr. Spieth was appointed a delegate to the conference.

Mr. Robert J. Sim read the paper of the evening on "Small Mammals as Predators of Japanese Beetle Grubs." It has been known for some time that starlings feed on the olive-like grubs of the Japanese Beetle. The skunk has also been reported as an active destroyer of insect grubs. Within the last year Mr. Sim has been studying the feeding habits of mice, the mole and the shrew. Little is known of the mouse-like animal, the shrew. These animals are numerous as individuals but not as species. For his experiments, Mr. Sim kept in captivity one mole, three shrews and several different rodents. He offered the same diet to them all: raw meat, earthworms, squash seeds, and Japanese beetle grubs. The mole and the shrews showed a decided preference for the grubs; the house mouse wouldn't eat the grubs at all; but the long-tailed jumping mouse (the kangaroo mouse) ate nothing but the grubs. Mr. Sim showed a series of slides illustrating the gradation of the rodents from those of subterranean habitat to terrestrial, and finally to arboreal habitat. The mole is the least developed, with functionless eyes, short hair, and short tail and the kangaroo mouse shows the greatest development, having a long tail (necessary in jumping) and long fur.

After a general discussion of Mr. Sim's interesting and entertaining paper the meeting was adjourned.

E. S. ENGELHARDT, *Secretary*

MEETING OF MARCH 6, 1934

A regular meeting of the Society was held on March 6, 1934, in the American Museum of Natural History; President A. L. Melander in the chair with eighteen members and seventeen visitors present.

Mr. Davis gave an informal report of the conference of the National Association of Audubon Societies for the protection and preservation of natural habitat for wild life in the area of Greater New York.

The resignation of Miss Louise Joutel was accepted with regret.

Mr. N. L. Fremed of the Sameth Exterminating Company was proposed for membership.

Mr. Mutchler informed the Society of the death of Mr. Beutenmuller, at one time president of the Society. On motion, the secretary was instructed to write a letter of sympathy to Mrs. Beutenmuller.

Mr. Gertsch, the announced speaker for the evening, was ill but the members present were honored in having Dr. Arthur Gibson of Ottawa speak on "The History of Entomology in Canada." Dr. Gibson brought warm greetings to the Society from the entomologists of Canada. He then spoke of the beginnings of applied entomology in Canada when nests of the brown-

tailed moth were first reported in 1909. This discovery resulted in the establishment of Field Laboratories in 1912 in various provinces of the Dominion. At present, the Entomological Branch of the Department of Agriculture maintains a staff of about two hundred persons, twelve permanent laboratories throughout the provinces and many field and temporary laboratories that can be moved as infestation demands. Dr. Gibson showed some slides of the various laboratories, the staff and also some of the corn borer and parasite work being done in Canada.

E. S. ENGELHARDT, *Secretary*

MEETING OF MARCH 20, 1934

A regular meeting of the Society was held on March 20, 1934 in the American Museum of Natural History; President A. L. Melander in the chair with eighteen members and twenty-one visitors present.

Mr. N. L. Fremed was elected a member of the Society.

The speaker of the evening was Mr. W. J. Gertsch; his subject "Habits of Spiders." By way of introduction, President Melander outlined the mythological origin of the spider from the alien maiden who excelled as a weaver and was for that reason converted by Minerva into Arachne—"the word the Greeks had for it"—the spider, and doomed to spin forever.

Mr. Gertsch mentioned several of the many diversified abodes and habits of spiders calling attention to their isolation from all other animals in their extensive use of silk, and of their reliance upon it—and in spinning a web for use as a net or snare—and to the modification of the male palpi and their strange use at the time of mating. The speaker's remarks on tarantulas were followed with keen interest. Attention was called to the poor vision of spiders, and their main reliance upon their sense of touch. All spiders are carnivorous, feeding entirely on living or freshly killed prey, of which only the liquid juices are used. Mr. Gertsch's remarks were illustrated with several slides and specimens of nests, etc., including a reproduction of Madame Merian's plate of the humming bird killed by a large tarantula whose habits, verified by later observers, she described in her books, with colored plates, on the "Metamorphoses of the Insects of Surinam," first published about 1705.

Messrs. Melander, Ruckes, Wurster and others discussed Mr. Gertsch's paper, after which the meeting adjourned.

JOHN D. SHERMAN JR., *Secretary pro tem.*

MEETING OF APRIL 3, 1934

A regular meeting of the Society was held on April 3, 1934, in the American Museum of Natural History; Vice-President Schwarz in the chair with eighteen members and fifteen visitors present.

The treasurer read a report concerning the readjustment of a bond held by the City Bank Farmers Trust Company.

The resignation of H. H. Johnson, Jr., was read and accepted with regret. The resignation of J. B. Kendall was read and accepted with regret.

The resignation of Harry Stiner was read and accepted with regret.

The members were acquainted with the death of W. M. Savin, a member.

Dr. Claasen of Cornell University expressed his pleasure in being present at a meeting of the Society and said a few words concerning the stone fly fauna of China on which he is now working together with Dr. Wu of the University of Peking.

Dr. Herman Spieth then read his paper on "Some Points Concerning Mayflies." Dr. Spieth described the life history of these ethereal and very interesting insects. He explained the development of the gills in the second instar. The gills are finger-like outpouchings each one double in form; the anterior lamella becomes shield-like in shape and serves as a protection for the posterior lamella which is more delicate and hair-like. This elaborate tracheal system shows that the mayflies came from terrestrial stock and have become aquatic. Some authorities have maintained that the gill is homologous with the later development of the wing. Snodgrass, however, has proved that the gill represents the old abdominal leg, thus indicating that the mayflies entered an aquatic habitat before they lost their legs.

In the last hour of the nymphal stage, the mouth parts degenerate and the insect disgorges its intestine, blows it up like a balloon which enables the nymph to be floated to the edge of the water. Here, after 24 hours, the adult emerges from the sub-imago and commences its nuptial flight or dance. After this dance in the air the females deposit their eggs in the water and then die. The appearance of the adult depends on the time of emergence. Spring emergences are large and dark, while those of the late summer are small and white in color.

The meeting was adjourned after some discussion of Dr. Spieth's paper.

E. S. ENGELHARDT, *Secretary*

MEETING OF APRIL 17, 1934

A regular meeting of the Society was held on April 17, 1934, in the American Museum of Natural History; President Melander in the chair with twenty-five members and twenty-two visitors present.

Dr. Creighton spoke on "The Biology of Leaf-Cutting Ants." Dr. Creighton illustrated his remarks with lantern slides, showing the varied habitat of these ants and the formation of the fungus gardens in their nests. No abstract was furnished.

After a general discussion of Dr. Creighton's remarks the meeting was adjourned.

E. S. ENGELHARDT, *Secretary*

MEETING OF MAY 1, 1934

A regular meeting of the Society was held on May 1, 1934, in the American Museum of Natural History; President Melander in the chair with twenty-four members and fifteen visitors present.

Dr. Curran informed the Society of the death of M. C. Van Duzee of Buffalo on April 21 of this year.

Mr. Davis gave a short resumé of his paper on "New Cicadas from North America" appearing in the *Journal of the Society* for March, 1935. He exhibited many of the types mentioned in this paper. The most beautiful of these was the green cicada, *Okanagodes Gracilis*, var. *viridis*, which appears in broods by itself and which has been collected around Tucson, Arizona.

Dr. Klots then read his paper on "Lower Permian Insects." Dr. Klots spent last June excavating the insect fossil beds near Elmo, Kansas. These beds were discovered about 1900 by an United States Geological Surveyor and have yielded excellent fossil material of the Permian Period. Dr. Klots then contrasted the Comstock-Needham system of venation with the convex-concave system of Lameere. This concavity and convexity theory of Lameere is very valuable in the study of fossils, the wings of some of the Permian insects being strongly ridged and corrugated. Dr. Klots concluded his remarks with a reel of pictures showing the terrain in which the Elmo fossil beds are found. The fossil specimens that he exhibited were most interesting, the wings ranging in length from 4 to 6 inches and marvelously preserved.

E. S. ENGELHARDT, *Secretary*

MEETING OF MAY 15, 1934

A regular meeting of the Society was held on May 15, 1934, in the American Museum of Natural History; President Melander in the chair with twenty members and twenty visitors present.

The treasurer read his semi-annual report as of May 1, 1934.

Mr. Joseph L. Goldberg, of 1057 Boynton Ave., Bronx, New York, was proposed for membership by Dr. Klots. The By-Laws were suspended and Mr. Goldberg was elected a member of the Society.

Dr. Curran announced the sudden death of Mr. C. Wm. Wurster on April 24. Mr. Wurster had been with the Society for many years and was a valuable and popular member. His absence will be felt keenly by all the members at future meetings of the Society. It was resolved that the Secretary convey an expression of the Society's loss and sympathy to Mrs. Wurster.

Dr. Melander gave one of the most interesting discourses of the year. He related his "Collecting Experiences in the Bermuda Islands in January, 1934." Dr. Melander gave a short history of the island since the settlement of the islands beginning in 1609 by voyagers shipwrecked on the treacherous coral reefs of which the islands are formed. With the aid of lantern slides which he had prepared, he described the interesting tropical vegetation of the islands. The members were able to enjoy the full range of colors to be found in this interesting archipelago through Dr. Melander's color photography which he said faithfully represented the fantastic appearance of vegetation and the salt water forms of life.

Dr. and Mrs. Melander stayed at the Marine Biological Station by arrangement with Prof. Conklin of Princeton. Dr. Melander recommended very highly this method of visiting the Bermuda Islands. He concluded his

remarks with a reel of moving pictures showing the many activities of the members of the Biological Station.

Dr. Melander then bade his farewell to the Society, saying that he and his wife were leaving in June for a fifteen-month trip through the West.

Vice-President Schwarz expressed the appreciation of the Society to Dr. Melander for all his efforts in the interest of the Society.

E. S. ENGELHARDT, *Secretary*

MEETING OF OCTOBER 2, 1934

A regular meeting of the Society was held on October 2, 1934; Vice-President Schwarz in the chair with twenty-three members and twenty visitors present.

On motion of Mr. Huntington, it was recommended that the amendment to Article XIV of the By-Laws reading, "and all applications for membership must be accompanied by dues as provided in Article XV" be rescinded.

That the following amendment to Article XIV be substituted:—"Upon election a candidate for active membership shall be immediately notified of his election and shall be advised that a membership card for the ensuing term will be forwarded to him on receipt of dues as provided in Article XV."

Upon due notification of all members of the Society this amendment to Article XIV was to be voted upon at the next meeting of the Society.

Mr. Schwarz informed the members of the publication of Dr. Curran's book, "Families and Genera of North American Diptera," on August 25, 1934, saying that Dr. Curran had performed a service of great magnitude and importance in bringing Williston's work of more than twenty years ago down to date. Mr. Schwarz spoke highly of the many illustrations, the well leaded pages and of the excellent work throughout of the Ballou Press.

The resignation of Dr. Bertha C. Cady was accepted with regret.

Mr. Davis spoke of being present at the funeral of Carl Schaeffer, a Life Member of the Society who died during August. Mr. Davis then exhibited some new species of Okanagana and Tibicen from the Northwestern United States.

Mr. Bell gave a short resumé of his trip with Mrs. Bell, Dr. and Mrs. Lutz and others through New Mexico and Arizona, where they spent some time in and around the Grand Canyon of the Colorado during July and August. Later in the summer he did some collecting for the museum and for Dr. Lutz in Northern Vermont.

Mr. Angell described a specimen of *Pseudolucanus placidus* Say collected at Rochester, N. Y., on June 3, 1933, and again at Fair Haven, N. Y., on June 25, 1933.

Miss Dobrosky spoke of her work during the summer with the insecticide, Kryocide, a material found in Greenland and containing a large amount of fluorine. Miss Dobrosky promised to give a paper at some future meeting on the results of her work with this insecticide.

Dr. Hartzell said that he had been working on plant diseases and insecticides. He exhibited a fine photograph of a cicada, first instar, just hatched. The photograph had won first prize at the recent contest of the Biological Photographers' Society.

The Society was happy in having Mr. Johnson among the members present. He spoke of some new Lepidoptera just received from South America.

Dr. Klots spoke of an unusual ascalaphid and also a dragon-fly caught by his students. He had visited Dr. McDunnough in his fine museum in Canada.

Dr. Leonard said a few words concerning his travels through the South and the North of the United States in the interests of Pyrethrum.

Dr. Readio, of Dutch Elm Disease fame, spoke of his work in trying to curb this disease.

Dr. Moore, now returned from a two-year exile in California, gave an interesting account of the unusual weather he had encountered while there and also spoke of some of the results of his experiments in testing the immunity of scale insects to insecticides. The red scale has developed no immunity or tolerance, it is merely a matter of penetration. The citricola scale thrives when the summer season is hot and the winter cold. During a cool summer, however, there was a natural mortality of 97 per cent.

Dr. Ruckes had successful collecting at Wading River, Long Island, where he took the Homopterous insect, *Ormenis*, in its pinkish form. It is normally a brilliant green. He also exhibited a cicindellid, one of the largest in the East and Northeast, which is easily told by the brilliant orange wings in flight. Dr. Ruckes is studying the evolution of the head sclerites of this cicindellid.

Dr. Sanders exhibited some decaying wood containing an increasing colony of termites showing that the Queen must be present though not yet found in the mass. Dr. Sanders said that in his opinion the ant population in this region is being destroyed by the pavement ants which, however, do not feed on termites.

Mr. Sherman spoke of visiting Mr. H. C. Fall in Tyngsboro, Mass. Mr. Fall had just received the collection of Charles Liebbeck, of Philadelphia. Mr. Fall hoped to find some new species in this large collection of Coleoptera contained in 250 closely packed Schmidt boxes.

Mrs. Engelhardt gave a resumé of a trip to California by motor.

Mr. Schwarz described the very pleasant trip he and his family had had through the West Indies on the S. S. Mauretania.

A letter of Mr. Sherman's was read from Dr. and Mrs. Melander containing greetings to the Society from both of them.

Mr. Schwarz suggested that the society's greetings, with regrets that they are absent from the meetings, be conveyed to the Melanders in Mr. Sherman's reply.

E. S. ENGELHARDT

MEETING OF OCTOBER 16, 1934

A regular meeting of the Society was held on October 16, 1934, at the American Museum of Natural History; Vice-President Schwarz in the chair with seventeen members and thirteen visitors present.

The following were nominated for election as Active Members of the Society: Miss Lucay Clausen, American Museum of Natural History, and Kenneth W. Tompkins, 263 W. 54th St., New York City.

It was moved and seconded that the amendment to Article XIV of the By-Laws reading "and all applications for membership must be accompanied by dues as provided in Article XV" be rescinded. Carried.

It was moved and seconded that the following amendment to Article XIV be substituted: "Upon election a candidate for active membership shall be immediately notified of his election and shall be advised that a membership card for the ensuing term will be forwarded to him on receipt of dues as provided in Article XV." Carried.

Dr. Albert Hartzell, the speaker of the evening, gave a paper on "Greenhouse Fumigation With Naphthalene Solutions." An abstract of this paper follows.

Progress made in naphthalene fumigation was briefly reviewed. A method of fumigating with naphthalene was described which permits the control of the concentration of naphthalene vapor so that the desired concentration will be maintained throughout the fumigation period.

The method involves the continued recirculation of greenhouse air through a saturator containing a solution of naphthalene in an inert solvent. The concentration of naphthalene in the solvent determines the maximum concentration which can be reached in greenhouse air.

The two types of saturators were described, one involving the use of a solid solution of sulphur and naphthalene and another involving the use of naphthalene in oil.

Satisfactory control of red spider mite could be obtained with both these methods without injury to plants usually considered sensitive to naphthalene, by a fumigation period of 15 hours.

Following Dr. Hartzell's paper there was a short discussion of the use of naphthalene as a fumigant by Messrs. Weiss, Moore and Horsfall.

E. S. ENGELHARDT

MEETING OF NOVEMBER 20, 1934

A regular meeting of the New York Entomological Society was held on November 20, 1934, at the American Museum of Natural History; Vice-President Schwarz in the chair with twenty-three members and seventeen visitors present.

The following were elected Active members of the Society: Miss Lucy Clausen, American Museum of Natural History; Mr. Kenneth W. Tompkins, 263 W. 54th St., New York City.

The following were proposed for Active membership in the Society: Mr. James Forbes, 139 Stone Ave., Yonkers, N. Y.; Mr. Charles Ortner, 64 W. 124th St., New York City.

Dr. H. R. Hagan, of the College of the City of New York, gave a paper on the "Viviparity in Insects." A summary of Dr. Hagan's remarks appears herewith.

The embryologist recognizes three types of bigametic reproduction, *i.e.*, oviparity, ovoviviparity, and viviparity. In the field of insect embryology, examples of the first and last groups are well-known and clear-cut, but those of the second category are quite unsatisfactory for observing stages in development from the time of fertilization to the instant of hatching, because developing eggs of different insect species vary a great deal. In certain cases (Orenia, Coleoptera; some Plecoptera) eggs hatch in less than a minute after deposition. My personal opinion is that oviparity refers to laying of eggs in which the chorion is intact while viviparity applies to the bearing of live young that have been freed from the enveloping chorion, if indeed, the latter membrane be present at all. It is wanting, for instance, in all Strepsiptera, all Polyctenidæ, Hemimerus, (Orthoptera) and parthogenetic aphids. Therefore, the term ovoviviparity in this connection is superfluous.

Several attempts have been made to classify the types of insect embryological development. Holmgren's plan has been most widely cited and generally used. Comstock adopted and improved upon it by inferring but not actually using a physical basis of separation. It appears that viviparous insects illustrate four types of viviparity, when physical and physiological adaptations on the part of the parent and her offspring are considered; these are:

1. Ovoviviparity: The eggs are passed into the uterus with an adequate supply of nutriment (yolk) to bring the contained embryos to full growth by hatching time. (Chrysomelidæ, Sarcophagidæ.)

2. Adenotrophic viviparity: In these cases (flies) the eggs are supplied with sufficient yolk to carry them through hatching, but one pair of accessory glands of the parent discharges fluid into the uterus upon which the larvæ feed until full grown. (Glossina and the Pupipara).

3. Exgenital viviparity: The mature ovaries rupture and eggs are dispersed into the hæmocœl, where development proceeds at the expense of the maternal tissues, especially the fat bodies. (Miastor and the Strepsiptera.)

4. Pseudoplacental viviparity: In these cases the egg does not possess a chorion and the embryo soon establishes a physical union with the maternal tissues. (Hemimerus, Polyctenidæ).

Dr. Hagan concluded his remarks with slides illustrating these various types of viviparity.

A discussion of Dr. Hagan's paper followed.

Mr. Davis exhibited specimens of *Ponchlonga cubensis*, a viviparous Cockroach, the young of which he had reared in 1929. One lived to be one year and one month old.

Dr. Hagan said that in the case of Pupipara the parent goes so far as to take care of the young after deposition.

ELIZABETH S. ENGELHARDT, *Secretary*

MEETING OF DECEMBER 4, 1934

A regular meeting of the Society was held on December 4, 1934, in the American Museum of Natural History; Vice-President Schwarz in the chair with twenty-three members and thirteen visitors present; and also those members and visitors of the Linnean Society attending the Ornithological Seminar in the adjoining room.

The following were elected active members of the Society: Mr. Charles Ortner, 64 West 124th St., New York City; Mr. James Forbes, 139 Stone Ave., Yonkers, N. Y.

Mr. Roland F. Hussey, of 19 West 16th St., New York City, was proposed for membership.

Dr. Herman Spieth read his paper on "Present Problems of Species Concept," the first in a series of two papers on this subject. An abstract of Dr. Spieth's paper follows:

Part I.—Historical Aspects and Genetical Approach.

One of the best ways of approaching an understanding of any problem is from a historical standpoint. The early part of the eighteenth century forms a good starting point for a discussion of modern methods in taxonomy and the species question. Due to a variety of causes, taxonomy was in a chaotic state at that time. To a great extent this was cleared up by the masterful work of Linnaeus and his students. Of particular importance was his introduction of the binomial nomenclature. It is important to note, however, that Linnaeus considered the species a *static* unit.

During the following hundred years or so, taxonomists followed closely the precepts of Linnaeus. In 1859 Darwin published his "Origin of Species" and changed the conception of species from a static unit to a *dynamic* one. Thus, the taxonomists must now show relationships as well as cataloguing and naming species.

At the beginning of the present century the rediscovery of Mendel's laws and the subsequent rise of genetics showed that the taxonomists had been using phenotypic and not genotypic characters to determine relationships between various species. Consequently the geneticists began to question the work of taxonomists. In turn the taxonomists questioned the work of the geneticists.

It is interesting to note that the early genetical work was mainly concerned with the genetics of individuals and not the genetics of species of "natural groups." Lately, however, there has been done some genetical work which has definitely concerned itself with the genetics of "natural groups." Outstanding has been the work of Goldschmidt on *Lymantria dispar*, the gypsy moth, and Sumner on *Peromyscus*. Their conclusions are not in entire agreement with each other and most certainly Goldschmidt's conclusion that subspecies do not give rise to new species would not be accepted by the majority of taxonomists. The present indications are that more work of a similar nature should be undertaken. It is obvious, however, that it will be impossible to work out the genetics of all groups. The most that can be hoped for is that the genetics of certain groups which are amenable to study of this type shall be worked and that the findings can be employed as a yardstick for other groups.

Following Dr. Spieth's paper there was a general discussion of the material it contained by Messrs. Ruckes, Curran, Bird and Klots.

Dr. Mayr, of the Ornithological Seminar, discussed Dr. Spieth's paper at some length saying that his main disagreement with geneticists was their loose definition of mutations. Fisher in his "Genetic Theory of Natural Selection" defines mutations as "any initiation of any heritable novelty." Dr. Mayr disagrees with Sumner and Goldschmidt because they make every effort to agree with the orthodox theory of genetics.

E. S. ENGELHARDT, *Secretary*